Corps' FRP concepts assist Army's DPWs

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The Department of Public Works(DPW) is a vital instrument for the process of change. One issue, which requires the DPW's attention, is the removal of antiquated and unused facilities which are located on Army installations. This department obviously plays an intricate role in shaping the future footprint of an installation.

The Facility Reduction Program (FRP), managed by the U.S. Army Corps of Engineers' Engineering and Support Center in Huntsville, Alabama, was created in 2003 to assist the DPWs on Army installations in the removal of facilities, which no longer meet today's standards. The FRP is responsible for the removal of facilities with Operation and Maintenance (OMA) funds. The remaining removal activities are under the direction of the Military Construction Army (MCA).

In a continuing effort to assist installation Department of Public Work's personnel during the removal of unused facilities, the FRP has created numerous exploratory concepts and studies during the last 18 months. These concepts and studies continue to increase the body of information nd advance the state of technology available, which in turn allows the DPW to make informed decisions when considering facility removal methods. Concept studies include:

- The Mobile Demolition Team Study which explored the feasibility of putting in place a traveling grinder which could reduce demolition residue to useable rubble at installations nation-wide.
- The Landfill Mining Study considered the pros and cons of excavating installation landfills to "mine" out the recoverable metal and further compact the landfill material.

Recently, two new concepts have been added to the growing list: The "Challenge: Ammo Bunker" Study and the "Shoreline Stabilization Design Shapes from Demolition Debris" Study.

Both programs address the need to remove large numbers of a specific type of facility. The FRP designed these studies in the continuing effort to secure had data relevant to the best methods for removal and reuse of demolition debris.

"Challenge: Ammo Bunker" is a study designed to supply information concerning the most cost effective removal of concrete ammunition bunkers built on Army bases in the 1950s. These bunkers, of which there are hundreds in existence, are heavily reinforced with rebar and have thick concrete walls. The FRP, in an effort to gather essential information on costs and methods, is currently preparing the performance requirements for a competition which will directly compare three possible methods for removal of the ammunition bunkers. The competition would bring together, three representative demolition methods at one installation location.

Demolition methods being considered for the removal competition include:

- Traditional demolition which uses heavy equipment to turn the building into rubble;
- Cutter technology in which bunkers are cut apart by diamond saws and large pieces are removed intact;
- Implosion by harmonic delamination in which the concrete is caused, by sound, to crack into small pieces, leaving only the rebar standing.

The competitors will be judged using the following criteria:

- Handling of materials remaining after demolition is complete.
- Cost effectiveness per square foot to complete demolition and removal.
- Safety and site security.
- Scheduling including the amount of time required for debris removal and the disruption factor of the process to installation operations.
- A logistics plan presented by each competitor detailing how demolition would be accomplished for 50 of the bunkers on various installations.

The comparative information gathered from this competition would be used to compile a best practices model, which could be applied during the removal of the large number of these bunkers in existence nationwide. And, the "winner" of the competition would be given a contract to remove a minimum of 100 bunkers, thereby putting into immediate use a successful removal method.

A second study is being conducted by the Facilities Reduction Program, the U.S. Army Corps of Engineers, and the Construction Engineering Research Laboratory (CERL). The "Shoreline Stabilization Design Shapes from Demolition Debris" Study considers a possible end-use following the removal of a category of barracks known as "Hammerheads." In these barracks, none of which is currently in use, all beams, posts, joists and rafters are of concrete construction.

The FRP will determine how many barracks are available or this project and which installations have the best potential to use the program. CERL is currently studying which components and structural members of the barracks can be used for what type of shoreline stabilization application.

The U.S. Army Corps of Engineers has the responsibility for the integration, operation and navigation of all shorelines and banks of navigable waterways in the U.S. The term "navigable waterway" denotes a waterway open for commercial navigation. It is possible the concrete barracks can generate a large supply of concrete design shapes from the removal process.

"Design shape" is a term that, in the demolition industry, designates that pieces have been formed for a specific purpose. Possible usage of the large concrete pieces cut and specifically shaped from the Hammerhead barracks include bank stabilization, erosion control, harbor breakwater and reef reclamation.

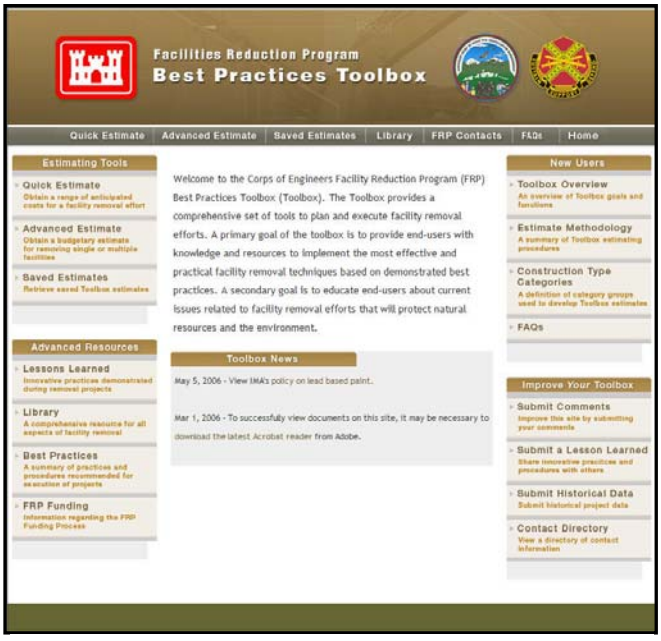
This study may result in the reuse of a massive amount of concrete which not only diverts waste from landfills but will also support one of the U.S. Army Corps of Engineers' primary responsibilities: the caretaking of the nation's waterways and shorelines.

The FRP's responsibility for the removal of installation facilities includes the requirement of sharing information with installation decision-makers. Continous evaluation of methodologies and practices, and the invention of cutting-edge studies and programs, creates a growing body of "best practices" knowledge. This compilation/sharing process is one of the FRP's mission directives.

All studies and innovations feed back into the information pool designed to allow installations, the demolition industry, and other stakeholders to have access to the accumulated information necessary to effectively and efficiently deal with the removal of facilities. The ultimate purpose of this assembled information is to assist the Installation Management Agency, the Garrison Commander and the Directors of Public Works in project costing during the process of securing bids for facility removal.

The information is also designed to provide guidance in calculating which method of demolition or deconstruction will best serve each individual removal situation.

The FRP has recently created the Best Practices ToolBox which is a comprehensive, centralized web-based program tailored specifically for facility removal efforts. The Best Practices ToolBox will assist the Department of Public Work's, local Corps of Engineer Districts, demolition contractors and other planners who deal with removal of facilities to estimate costs more reliably.



You can visit the Toolbox by navigating your web browser to:
https://eko.usace.army.mil/frptoolbox/

The ToolBox concept is the culmination of innovative studies, documented experience and end user input which identifies best practices upon which strategic decisions can be made. Use of the Tool- Box will allow better calculations "upfront" in the removal process. The ToolBox provides estimates for calculating the percentage of materials, which may be diverted from the waste stream and into reuse. This calculation provides the end user with a benchmark or standard to estimate, for planning purposes, the type and quality of

materials that might be diverted from the waste stream. It also provides an authoritative comparison by which the removal contractor's initial proposal and final performance concerning waste stream diversion can be measured.

Through the use of the Tool- Box functions, a uniform standard for guidance and criteria is in place for facility removal. The Best Practices ToolBox is in the final testing stages and will be available in mid-July at: https://eko.usace.army.mil/frptoolbox/index.cfm.

The U.S. Army Corps of Engineers' Huntsville Center and the FRP continue to work with innovative concepts and in depth studies and to accumulate relevant knowledge to better support installation Departments of Public Works. The Program continues to pursue the goal of quickly and effectively reducing facilities, in accordance with mission and mandate, with maximum support for security requirements and minimum disruption of installation operations.

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